



Attorney's Docket No.: 28955.4026

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial No. 10/532,794

Confirmation No. 6624

In re Application of:

Group Art Unit: 1794

MASAKAZU FUNAHASHI

Examiner: Dawn L. Garrett

Filed: April 25, 2005

For: MATERIAL FOR ORGANIC ELECTROLUMINESCENT DEVICE AND ORGANIC  
ELECTROLUMINESCENT DEVICE USING SAME

US PATENT AND TRADEMARK OFFICE  
Customer Service Window – Mail Stop Amendment  
Randolph building  
401 Dulany Street  
Alexandria, Virginia 22313-1450

**DECLARATION OF MASAKAZU FUNAHASHI UNDER 37 CFR § 1.132**

I, Masakazu Funahashi, declare that:

1. I received a master degree from Tokyo Institute of Technology graduate school in March 1993. I have been employed since April, 1993 by IDEMITSU KOSAN CO., LTD. of 1-1, Marunouchi 3-chome, Chiyoda-ku, Tokyo 100-8321 Japan, and have been engaged in research on molecular design and synthesis of organic electroluminescent materials, in the Central Research Laboratory of that company since June 1993. I have personal knowledge of the facts stated herein, except for the facts which are based on information and belief.

2. All statements made herein based on my own knowledge are true and all statements made on information and belief are believed to be true.

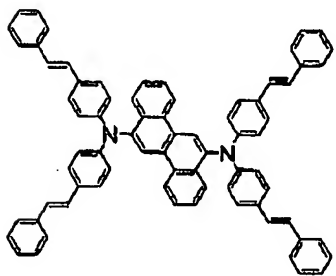
3. Experiment was conducted to establish the patentability of the claimed invention (amended claim 1). An object of the experiment is to show that the compound (35) in page 30 of EP1061112 cannot emit blue light.

#### 4. Experiment

##### Synthesis Example 1 [Synthesis of the compound (A)]

Under an argon atmosphere, a 300 ml three-necked flask equipped with a condenser was charged with 2.3 g (6.1 mmol) of 6,12-dibromochrysene, 4.6 g (12.3 mmol) of di(4-styrylphenyl)amine, 0.03 g (2.5 mol %) of palladium acetate, 0.06 g (5 mol %) of tri-*t*-butylphosphine, 1.2 g (12.3 mmol) of sodium *t*-butoxide, and 100 ml of anhydrous toluene, followed by allowing to react while stirring and heating at 100°C through overnight.

After the completion of the reaction, crystals precipitated were collected through filtration, followed by washing with 50 ml of toluene and 100 ml of methanol to obtain 4.4 g (yield: 75%) of a pale yellow powder. It was identified through NMR spectrum and FD-MS analysis that the powder is the compound (A).



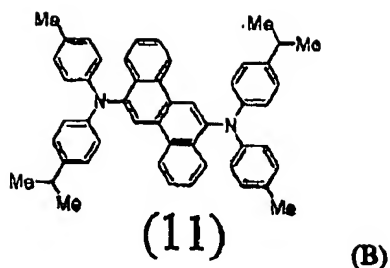
(A)

##### Synthesis Example 2 [Synthesis of the compound (B)]

[The compound (B) is identical to the compound (11) synthesized in the Synthesis Example 8 of the present Specification]

Under an argon atmosphere, a 300 ml three-necked flask equipped with a condenser was charged with 3.8 g (10 mmol) of 6,12-dibromochrysene, 5.6 g (25 mmol) of 4-isopropylphenyl-*p*-tolylamine, 0.03 g (1.5 mol %) of palladium acetate, 0.06 g (3 mol %) of tri-*t*-butylphosphine, 2.4 g (25 mmol) of sodium *t*-butoxide, and 100 ml of anhydrous toluene, followed by allowing to react while stirring and heating at 100°C through overnight.

After the completion of the reaction, crystals precipitated were collected through filtration, followed by washing with 50 ml of toluene and 100 ml of methanol to obtain 6.6 g (yield: 89%) of a pale yellow powder. It was identified through NMR spectrum and FD-MS analysis that the powder is the compound (B).



#### Evaluation

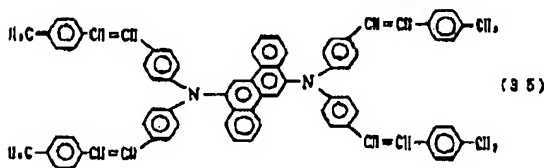
Fluorescence spectra were measured by a HITACHI F-7000 fluorescence spectrophotometer using a methylene chloride solution containing the compound (A) or (B).

The peak fluorescence  $\lambda_{\text{max}}$  wavelength of compound (A) or (B) was 480nm, 468nm, respectively.

The result shows that the maximum wavelength shifts (that is, light emitted becomes not blue in an EL device) to a side of longer wavelength in the fluorescence spectrum by using the compound (A) which has a styryl group. That is, the compounds having styryl group(s) in the EL device cannot emit blue light whereas the compounds in the present invention can emit blue light

The values 480nm and 468nm are comparatively close. However, even such the difference between the values is significant in view of emission light in an EL device.

The compound (A) is supposed to the compound (35) in the EP. I was not able to obtain or prepare the compound (35) in the EP. Accordingly, the compound (A) which is very similar to the compound (35) was synthesized and used in place of the compound (35).



It is to be noted that the compound (A) is very similar to the compound (35) in page 30 of EP1061112, and the compound (35) has a methyl group in respective styryl groups whereas the compound (A) does not have methyl group.

A person skilled in the art could be clearly aware that there are scarcely any changes in the fluorescence spectrum between the compound (A) and the compound (35).

*Accordingly, the compound (35) in the EP can be replaced by the compound (A) for comparing emission light.*

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct. I acknowledge that willful false statements and the like are punishable by fine or imprisonment, or both and may jeopardize the validity of the application or any patent issuing thereon.

Date: May 28 2008

Masakazu Funahashi  
MASAKAZU FUNAHASHI